



Quick Note 52

Connecting to Digi Remote Manager Through Web Proxy

Digi Product Management

February 2017

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1 DOCUMENT VERSION

Version Number	Status
0.1	Initial release – Aug 2015
0.2	Digi rebranding – Feb 2017

2 ABSTRACT

In many network topologies utilizing a private cellular APN, IP traffic is restricted to the Enterprise network and not allowed out to the Internet. In this type of Enterprise network configuration, outbound connections to the Internet are strictly refused other than possibly over ports like 443, which is used for encrypted access to websites. This access is typically allowed, as most employees need to access the Internet in order to perform their job functions. As a result, many network administrators will utilize a web proxy solution in order to secure connections outbound from the Enterprise and to provide appropriate restrictions and logging. Digi routers and Remote Manager are designed to utilize a web proxy for establishing connections between devices within the enterprise and Digi Remote Manager.

This document will outline a process for configuring Digi routers to utilize Digi's Remote Manager device management solution via a web proxy so there is no need for network administrators to make any configuration changes to their routers or firewalls.

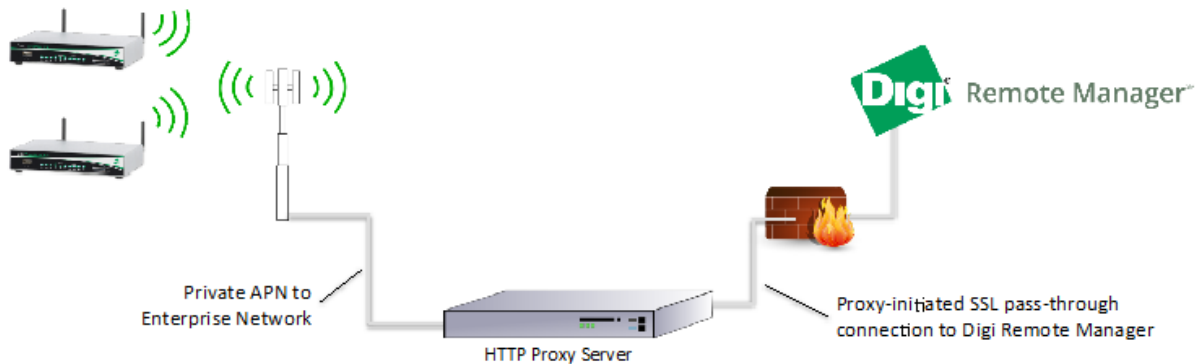
3 INTRODUCTION

This document is intended for network administrators who need to utilize the Digi Remote Manager or Device Cloud product; but don't allow general outbound TCP/IP connections. This will typically be the case when your network configuration consists of a private APN for cellular connectivity, which has a private IP range and is terminated within the enterprise network.

If you already have a web proxy server configured, you may simply use that; however, if you prefer to setup a separate web proxy specifically for device connectivity, this document will walk you through that process. In addition, this document provides a link to a virtual machine image containing a pre-

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built web proxy as described in the document.



The device uses the "connect" method for web explicit proxies. This connect method is used by clients with SSL streams as it preserves the SSL stream and passes it completely intact. The device will receive SSL the certificate it was expecting, so not only is the stream guaranteed encrypted; but the identity of Digi Remote Manager is fully validated.

NOTE: It is critical to state that we have ALSO setup an external TCP port loop. Some customers cannot route port 3199 out of their corporate DMZ network, even with their corporate web proxy. If you change the configuration of the device to use "proxy.digi.com" port 443, this will resolve this issue. This works around the issue by connecting to the Digi Device Cloud/Remote Manager service on the standard SSL port 443 instead of port 3199.

4 WEB PROXY CONFIGURATION

4.1 Web Proxy Overview

1. How to configure the Web Proxy:
 - a. Run a pre-configured Web Proxy in a new Virtual Machine.
 - b. Build your own Web Proxy.
 - c. Use your existing Web Proxy.

4.2 Pre-configured Web Proxy in a new Virtual Machine

This section describes how to deploy an OVA template example VM Digi Remote Manager Proxy Server.

For an example Proxy that you can run, you will need to first need a Virtualization product. We have OVA templates available for VirtualBox, and VMware ESXi 5.

For the VM Software, VirtualBox from Oracle is free. Located here:

<https://www.virtualbox.org/wiki/Downloads>

You will also need to download the OVA VM template File located here:

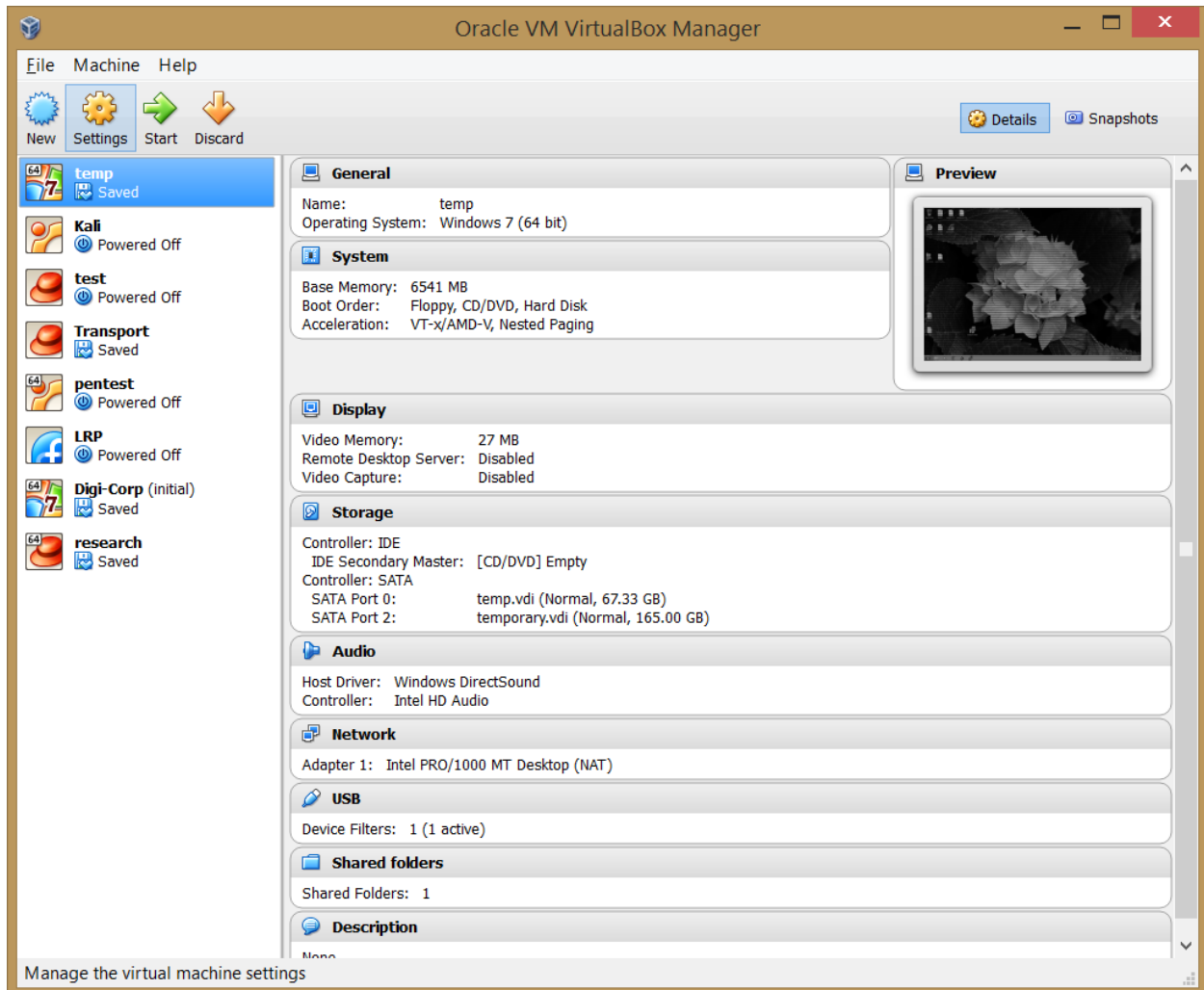
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OVA for VirtualBox - <https://s3-us-west-2.amazonaws.com/dcrmsupport/Digi-RMProxy-virtualbox.ova>

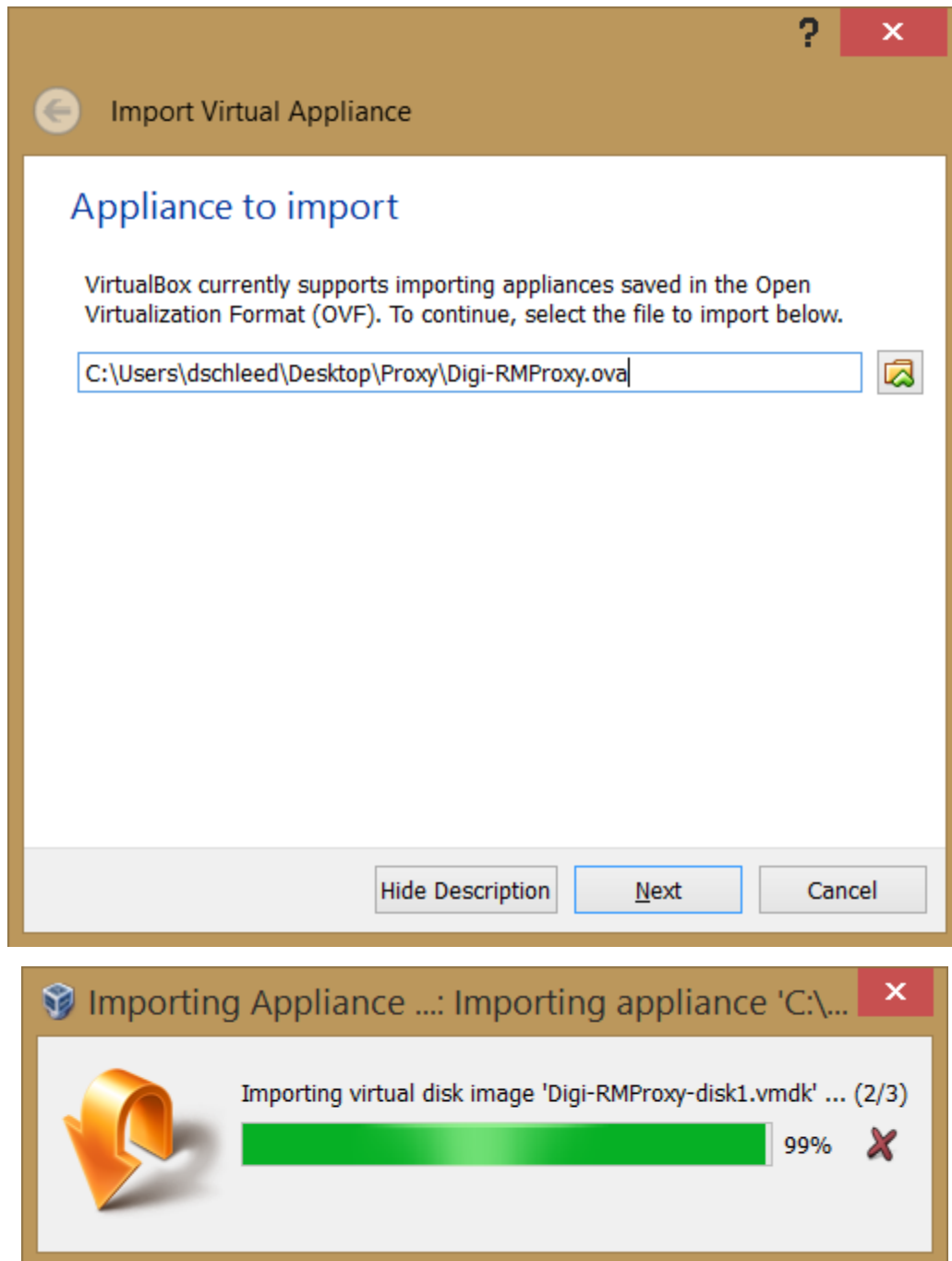
OVA for VMware - <https://s3-us-west-2.amazonaws.com/dcrmsupport/Digi-RMProxy-VMware.ova>

4.2.1 Using VirtualBox

1. Go to File -> Import Appliance.



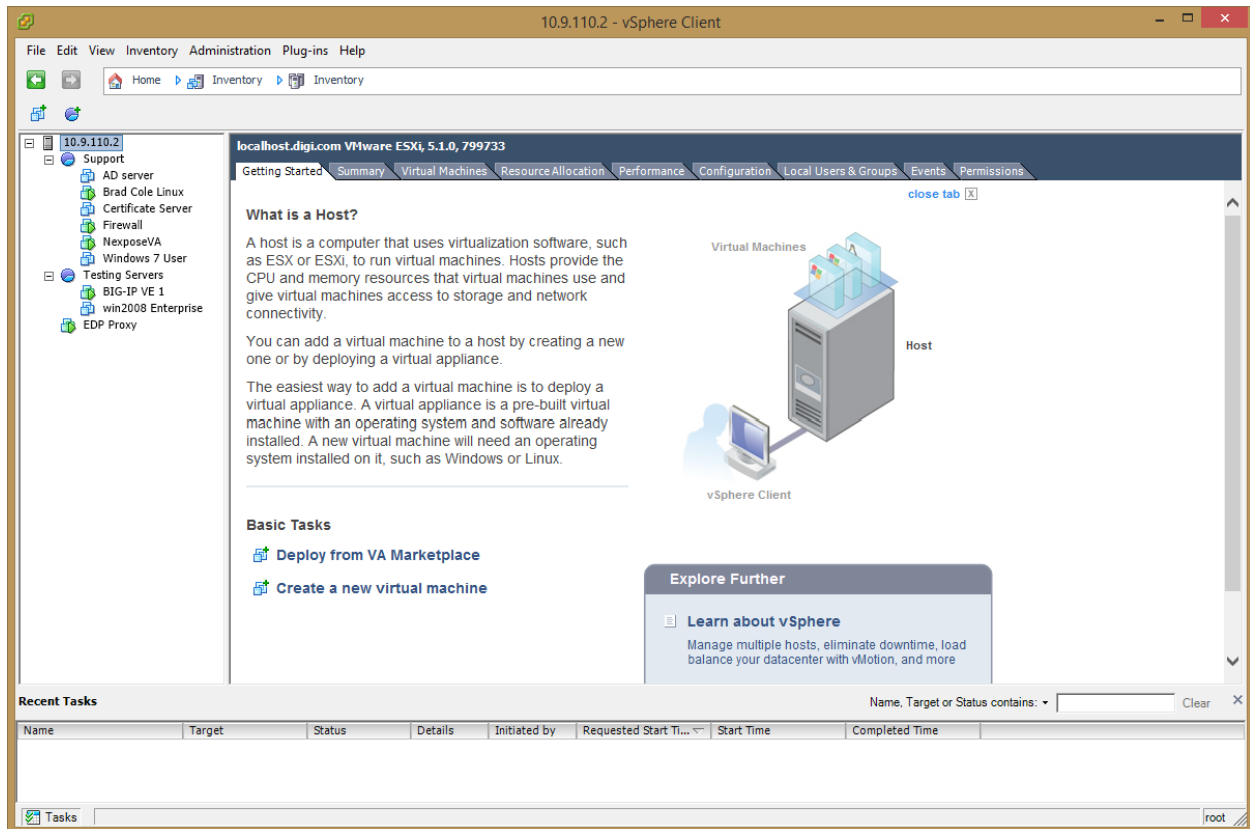
2. Choose your OVA file and click on Import.



4.2.2 Using VMware

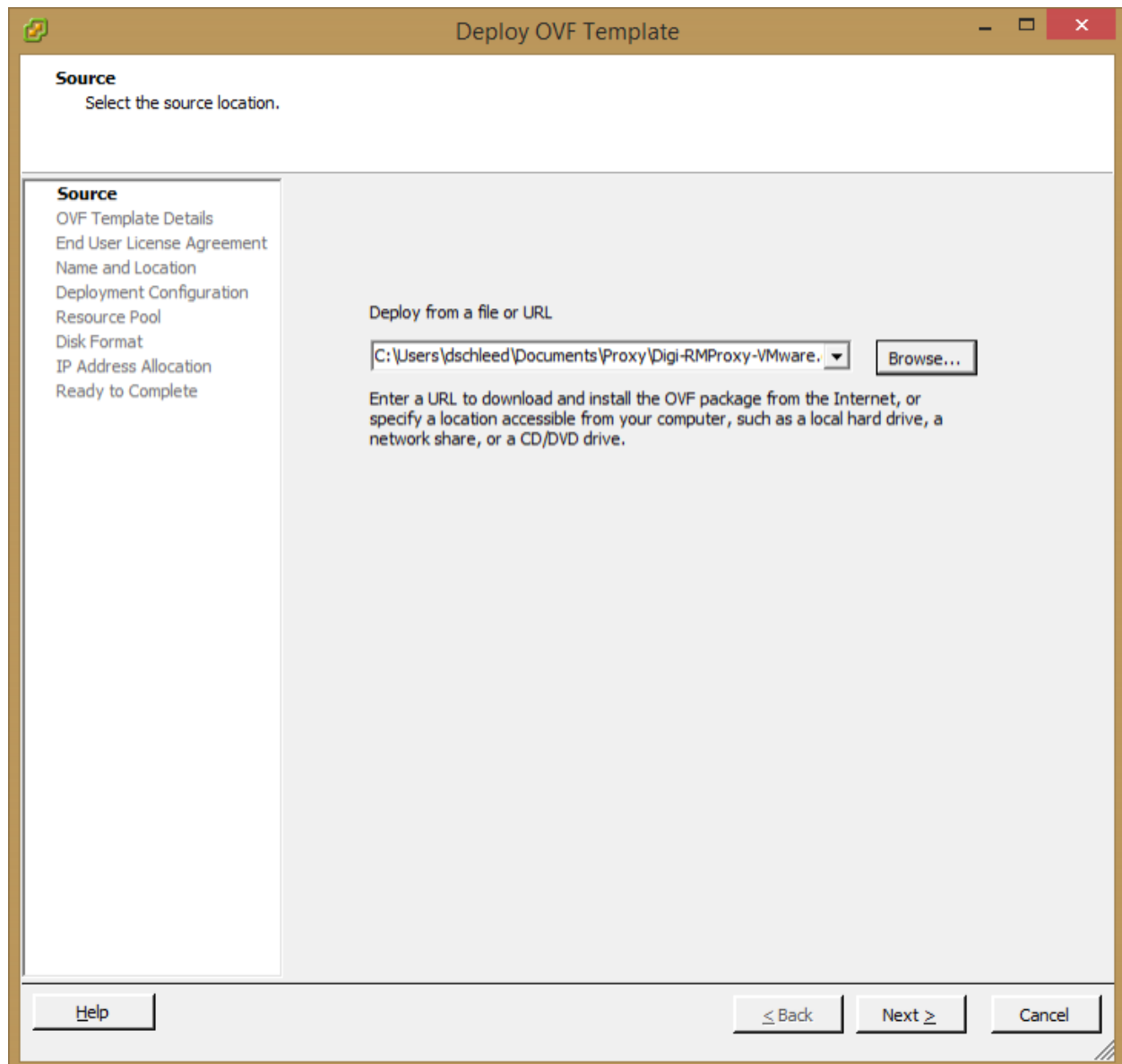
1. Open vSphere Client and click on File -> Deploy OVF Template.

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2. Choose the proper OVF file and click "Next" a few times.

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3. Give the VM a name.

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The screenshot shows a window titled "Deploy OVF Template" with a standard Windows-style title bar (minimize, maximize, close buttons). The window is divided into two main sections. On the left is a sidebar with a list of steps: "Source", "OVF Template Details", "Name and Location" (which is highlighted in bold), "Resource Pool", "Disk Format", "Network Mapping", and "Ready to Complete". The main area on the right is titled "Name and Location" with the instruction "Specify a name and location for the deployed template". It contains a "Name:" label above a text input field that has "DMZ Proxy" entered. Below the input field is a note: "The name can contain up to 80 characters and it must be unique within the inventory folder." At the bottom of the window are three buttons: "Help", "< Back", and "Next >", and a "Cancel" button on the far right.

Deploy OVF Template

Name and Location
Specify a name and location for the deployed template

[Source](#)
[OVF Template Details](#)
Name and Location
Resource Pool
Disk Format
Network Mapping
Ready to Complete

Name:
DMZ Proxy

The name can contain up to 80 characters and it must be unique within the inventory folder.

Help < Back Next > Cancel

4. Click "Next" when asked about the datastore, choose your datastore and Drive Provisioning (Thin Provisioning is suggested).

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The screenshot shows a window titled "Deploy OVF Template" with a standard Windows-style title bar (minimize, maximize, close buttons). The window content is divided into a left sidebar and a main area. The sidebar contains a list of steps: "Source", "OVF Template Details", "Name and Location", "Resource Pool", "Disk Format" (which is highlighted in bold), "Network Mapping", and "Ready to Complete". The main area has a heading "Disk Format" followed by the question "In which format do you want to store the virtual disks?". Below this, there are two input fields: "Datastore:" with the value "datastore1" and "Available space (GB):" with the value "2027.5". There are three radio button options: "Thick Provision Lazy Zeroed" (which is selected), "Thick Provision Eager Zeroed", and "Thin Provision". At the bottom of the window, there are three buttons: "Help", "< Back", and "Next >", and a "Cancel" button on the far right.

Deploy OVF Template

Disk Format
In which format do you want to store the virtual disks?

[Source](#)
[OVF Template Details](#)
[Name and Location](#)
[Resource Pool](#)
Disk Format
[Network Mapping](#)
[Ready to Complete](#)

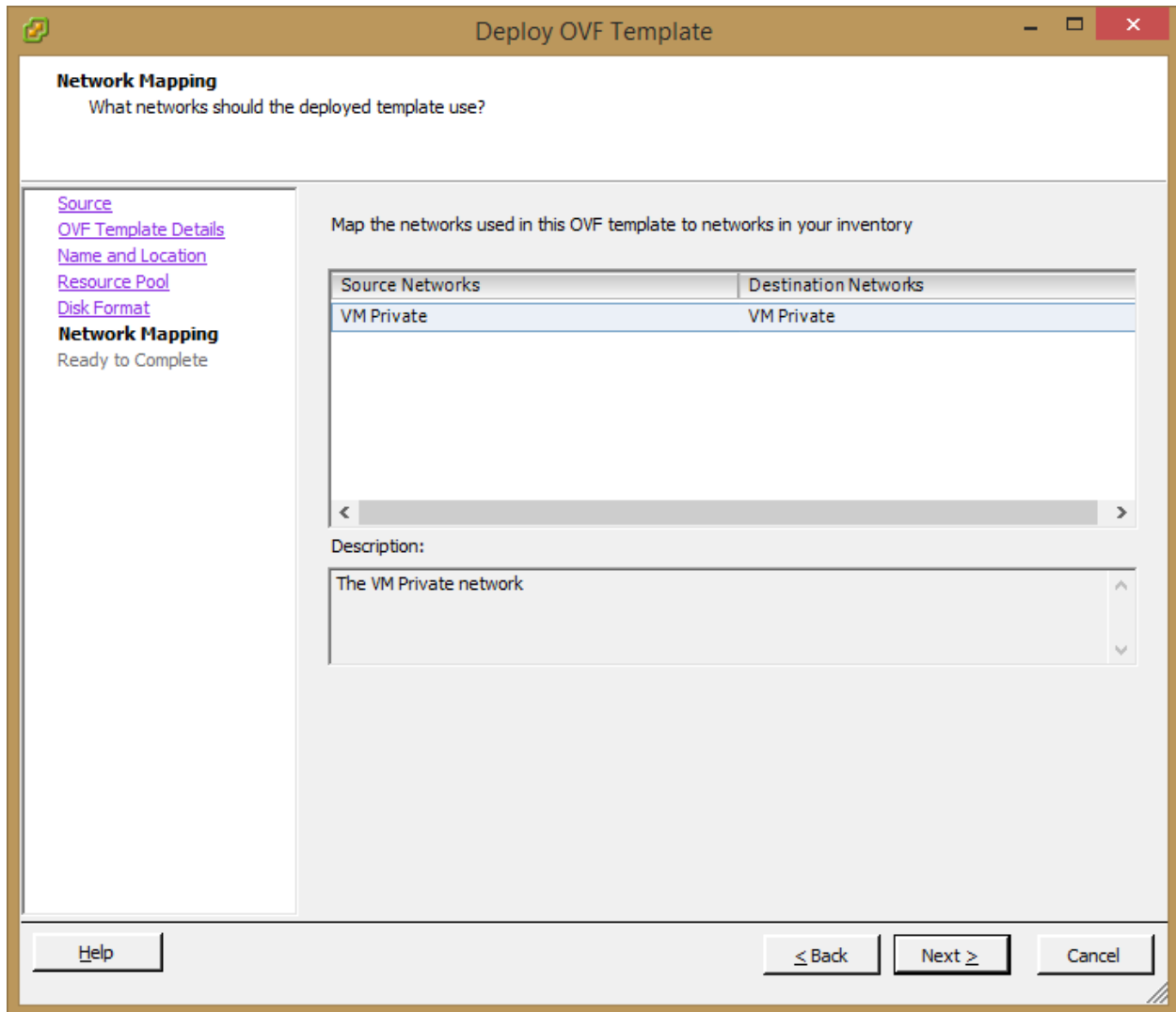
Datastore:

Available space (GB):

☒ Thick Provision Lazy Zeroed
☐ Thick Provision Eager Zeroed
☐ Thin Provision

[Help](#) [< Back](#) [Next >](#) [Cancel](#)

5. Choose the network interface that the Proxy will be on (probably your DMZ).
NOTE: If you prefer a bastion host, then you may eventually want to provision two network interfaces. That config is not covered here, and is left to the VM IT team.



6. Click "Finish".

4.2.3 Final Steps for both VM Products

1. Once completed, start your Virtual Machine.
2. The username to login is "root", with the password as "digi".
3. See the instructions below for changing the IP address. This effectively means editing the `/etc/sysconfig/network-scripts/ifcfg-enpos3` file to contain the correct info. DO NOT forget to disable DHCP, and set ONBOOT=yes.
 - a. Example static `/etc/sysconfig/network-scripts/ifcfg-enpos3`:
(screenshot)

```
TYPE=Ethernet
BOOTPROTO=static
IPADDR=192.168.0.53
NETMASK=255.255.255.0
```

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```
GATEWAY=192.168.0.1
IPV6INIT=no
NAME=enp0s3
UUID=52f12499-6e6f-472d-9036-834d56e9cd5b
DEVICE=enp0s3
ONBOOT=yes
```

- b. Example `/etc/sysconfig/network` file, for a static IP and DNS entries:
(screenshot)

```
DNS1=8.8.8.8
DNS2=8.8.4.4
HOSTNAME=proxy.digi.com
```

4. We also suggest installing the VM drivers for the Guest OS. See the directions for your VM software on how to do this.

4.3 Building a New Web Proxy

We recommend using the Linux distro CentOS. CentOS is a free version of Redhat's Enterprise OS. If you wish to have a fully supported production version, purchasing Red Hat's OS (latest release) should follow the same configuration steps below.

1. Go to the www.centos.org website.



2. Click "Get CentOS Now".

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3. Click "Minimal ISO".
4. Pick a Mirror Site, and click on a link.



5. With your favorite VM software, mount the ISO disk and start the install. The parameters for the VM should be: 2.0GB Ram, 20 GB Disk, 1 CPU's
6. Choose Default install methods, set root password to "digi".
7. For CentOS 7, you will need to do the following steps:
 - a. Edit /etc/sysconfig/network-scripts/ifcfg-enpos3
 - i. Change the one line to "ONBOOT=yes".

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- ii. You can change other parameters if you want to change the IP address of the Proxy. This should include disabling the DHCP config as well.
- iii. Run "yum update", respond "y" to the prompts.
- iv. Run "yum install squid", respond "y" to the prompt.

```
perl-Pod-Escapes          noarch      1:1.04-285.el7      base      50 k
perl-Pod-Perldoc          noarch      3.20-4.el7          base      87 k
perl-Pod-Simple           noarch      1:3.28-4.el7        base     216 k
perl-Pod-Usage            noarch      1.63-3.el7          base      27 k
perl-Scalar-List-Utils    x86_64     1.27-248.el7        base      36 k
perl-Socket               x86_64     2.010-3.el7         base      49 k
perl-Storable             x86_64     2.45-3.el7          base      77 k
perl-Text-ParseWords      noarch      3.29-4.el7          base      14 k
perl-Time-HiRes           x86_64     4:1.9725-3.el7      base      45 k
perl-Time-Local           noarch      1.2300-2.el7        base      24 k
perl-constant             noarch      1.27-2.el7          base      19 k
perl-libs                 x86_64     4:5.16.3-285.el7    base     687 k
perl-macros               x86_64     4:5.16.3-285.el7    base      42 k
perl-parent              noarch      1:0.225-244.el7     base      12 k
perl-podlators            noarch      2.5.1-3.el7         base     112 k
perl-threads              x86_64     1.87-4.el7          base      49 k
perl-threads-shared       x86_64     1.43-6.el7          base      39 k

Transaction Summary
=====
Install 1 Package (+38 Dependent packages)

Total download size: 15 M
Installed size: 48 M
Is this ok [y/d/N]: _
```

8. Edit the /etc/squid/squid.conf file (with vi):
 - a. Add the line "acl Safe_ports port 3199 # DeviceCloud EDP Port"
 - b. Add the line "acl SSL_port 3199"
 - c. You may need to change the lines "acl localnet src XXXX" to include the networks that the Devices reside on. Otherwise the PROXY will refuse to allow the connections to traverse through the proxy. Default config will allow devices with private network addresses to use the proxy (10.0.0.0/8,172.16.0.0/12,and 192.168.0.0/16).
9. Systemctl start squid.service
10. Systemctl enable squid.service
11. Firewall-cmd --permanent --zone=public --add-port=3128/tcp
12. Once you get everything in place, you will have to install the proper VM drivers for the Proxy machine.

5 TRANSPORT ROUTER CONFIGURATION

This section describes how to configure your TransPort to connect through the Proxy and how to test to be certain it is connecting to Digi Remote Manager through the Proxy.

5.1 TransPort Configuration

1. Log into the TransPort via the web interface.
2. Navigate to Configuration - Remote Management.
3. Enable Remote Manager.
4. Within the "Advanced" section, set a Proxy. The Proxy Port should be 3128, and the Proxy URL should be the IP address of the Proxy server.

User : username

[Configuration - Remote Management > Remote Manager > Advanced](#)

Remote Manager

Connection Settings

☒ Enable Remote Management and Configuration using Remote Manager

☒ DNS Resolve Server Address only when a default route is UP

☒ Automatically reconnect to the server after being disconnected

Reconnect after: 0 hrs 0 mins 10 secs

Password:

Confirm password:

Use SSL: ☒

SMS Settings

Health Metrics

Advanced

The following settings are advanced settings used to fine tune the connection between the Remote Manager server and this router. The default settings will typically work in most situations.

Connection Settings

Connect using a proxy ☒

Proxy Port:

Proxy URL:

☐ Disconnect when Remote Manager server is idle

Data Service Token:

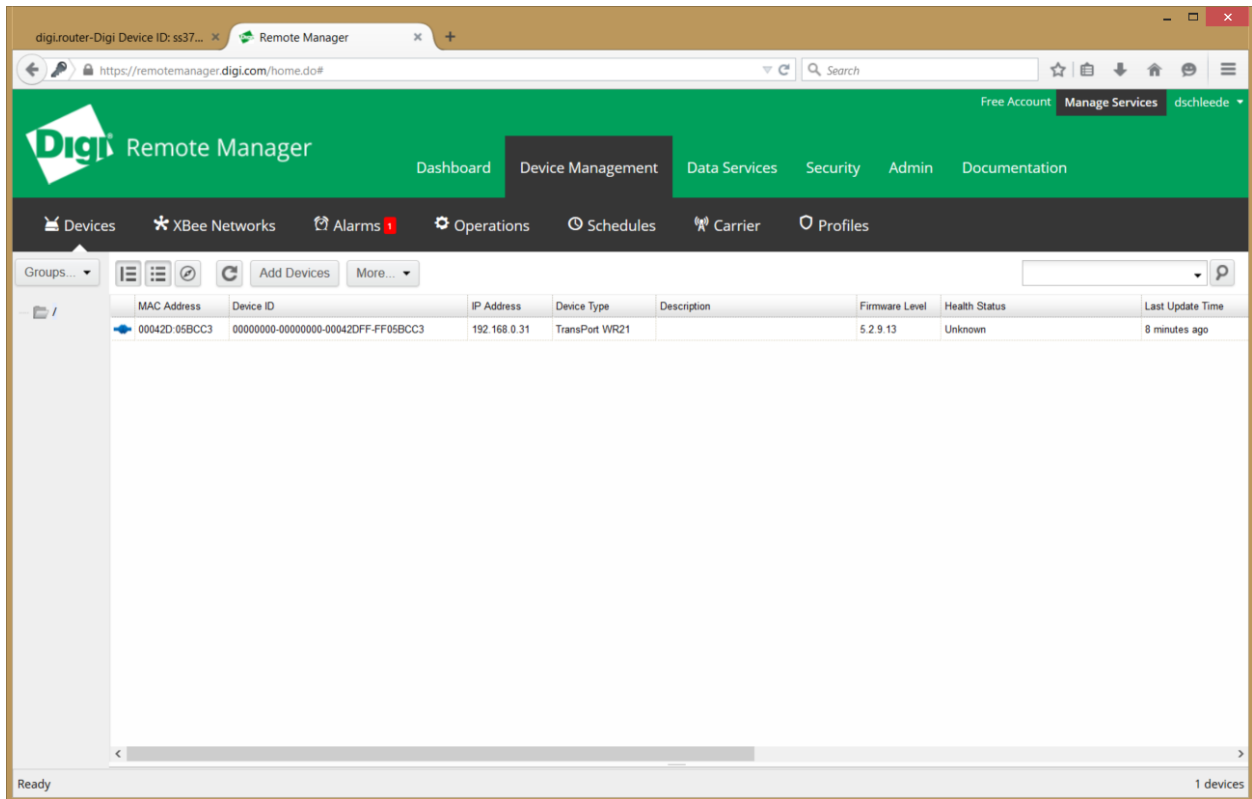
Confirm data service token:

5. Click the Apply button.
6. Click the "here" link to save the configuration, and then click Save All.

5.2 Testing the Configuration

Make sure your device has been added to the Digi Remote Manager cloud.

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6 FOR MORE INFORMATION

Digi continues to improve the network efficiency of Digi Remote Manager, and will update this document to provide relevant, timely information.

For pre-sales Technical Support or questions regarding Digi Remote Manager, please contact your Digi sales rep or sales engineer, or Digi sales partner.

For Digi Technical Support issues or questions:

- Digi Technical Support:
<http://www.digi.com/support/> or +1 952-912-3456 (USA) or +44 1943 605055 (UK)
- Digi Sales:
952-912-3444 opt. 2 (USA) or +44 1943 605055 (UK)
- Product info: www.digi.com